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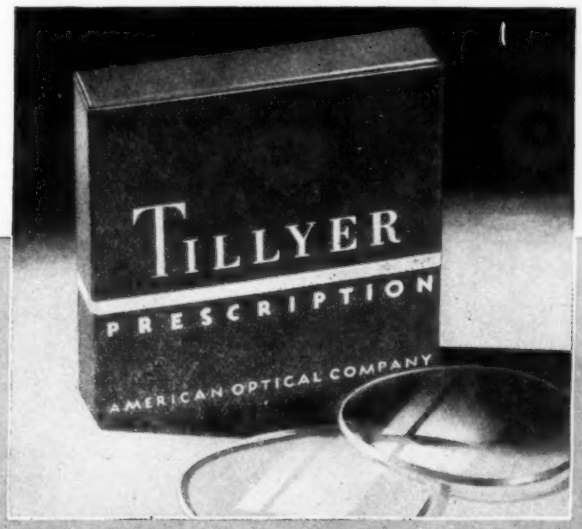

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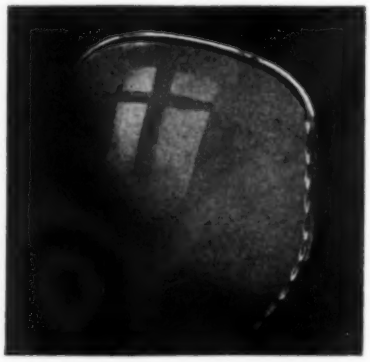

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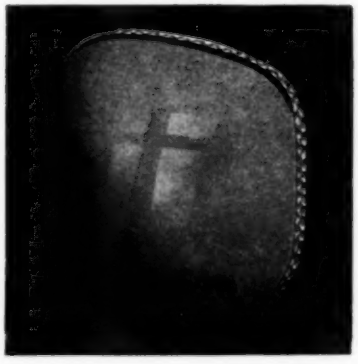

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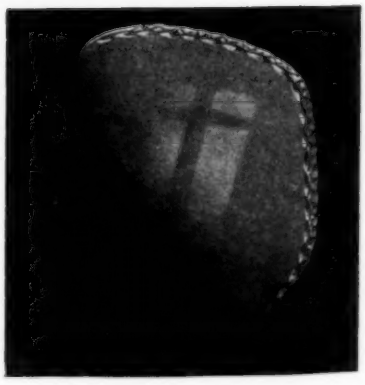

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AMERICAN JOURNAL OF OPTOMETRY

Vol. 17 MAY, 1940 No. 5

PROJECTION HABITS IN ALTERNATE SQUINTS*

Frederick W. Brock, Opt. D.
New York, N. Y.

1. BINOCULAR VISION IN ALTERNATE SQUINT

Before we can intelligently approach the problem of treating concomitant squints of alternating types, we must consider the peculiar visual conceptions which are prevalent amongst subjects afflicted with this troublesome defect.

It can no longer be doubted that, here, we do not deal with alternating monocular vision but rather with a binocular concept of an entirely different type than that found in normal binocular vision. For instance, these alternators possess two areas of distinct (macular) vision in the binocular visual field. To convince oneself of this one need only prepare a chart with two small letters laterally separated some five inches[1] and to place this chart in front of the squinter in such a way that these letters lie along the primary visual axes of alternate eyes. The patient will then recognize both letters at once and yet see them in their actual spatial location: one letter appearing five inches to the side of the fixated letter. If a third target is placed intermediate to the first two, it also will be seen singly and will appear much less sharply defined than either of the two end-targets. The fixation axis may shift from one to the other eye dependent on whether the one or other end-target receives the greater attention but it apparently remains impossible for the patient to give equal attention to both the right and left target at one and the same time.

2. CONSCIOUS PERCEPTIONS IN ALTERNATE SQUINT

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*An abridgment of the material presented before the clinical staff of the Columbia School of Optometry, Columbia University, New York City, February 22, 1940. Submitted for publication February 27, 1940.

[1] This test is an adaptation of a test originally described by Verhoeff: Verhoeff, F. H.: Anomalous projection and other Visual Phenomena associated with Strabismus: Arch. Ophth. 19-5, page 672.

If a string is attached to each of the above end-targets and these strings are stretched along the primary visual axes of both eyes so as to terminate directly underneath the two eyes, both exotropic and esotropic patients are conscious of two strings extending in V formation from their person to the two targets at an angular deviation nearly equal to the angle of squint. Exotropes will never be conscious of more than two

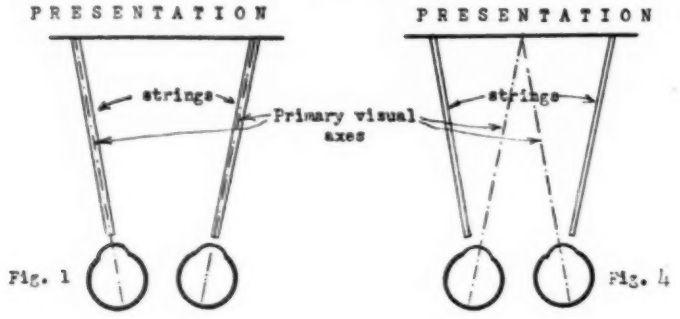

Fig. 1

Fig. 4

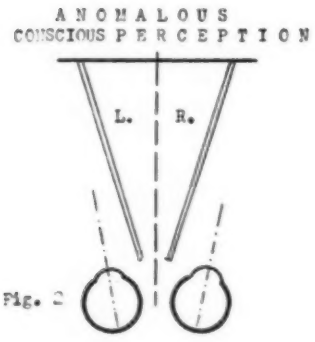

Fig. 2

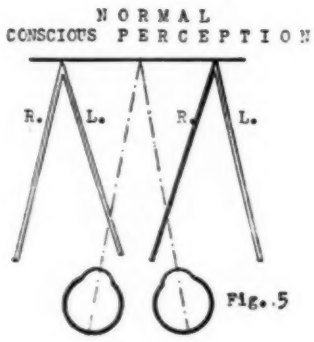

Fig. 5

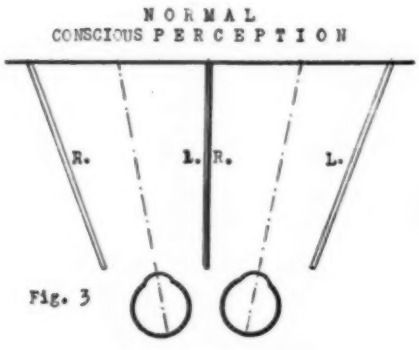

Fig. 3

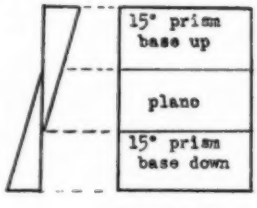

Fig. 12

lengths of strings (Fig. 2) whereas esotropes may, at times, have the confusing sensation of two additional strings of shorter length crossing the

two primary strings and thence disappearing from view. These secondary strings, when visible, appear to come from each temporal side of the head crossing the primary strings at a more distant point and disappearing from view before reaching the median plane of the head (Fig. 7).

The significance of this may easily be understood when we compare this visual behavior with that of a subject possessing normal binocular vision. In the latter case, when, with the aid of suitable prisms, the primary visual axes are trained along alternate strings, the resultant conscious visual sensations are as follows: with divergent visual axes (Fig. 1) there appears a (unified) string running along the median plane of the head terminating at a target composed of both end-targets in superimposition. There is further awareness of two uncrossed diverging strings extending from both sides of the head to two individual targets lying at some distance on either side of the composite fixation target (Fig. 3).

If, now, fixation is shifted to the intermediate target, the position and direction of the two strings remaining as before (Fig. 4), one immediately becomes aware of the presence of four strings, two converging from the respective end-targets to a point medially between the two eyes, and two additional ones running from the same proximal positions to temporal positions on the same side of the head (Fig. 5).

Should, in simulation of convergent strabismus, the eyes be trained along the crossed strings, (Fig. 6), the resulting conscious visual sensation is that of three strings all crossing each other at a point situated in the horopter plane. The (unified) central string app ars to extend along the median plane of the head to a composite target, while the two lateral strings run through the crossing point from two lateral nonfixated targets and terminate on opposite sides of the head (Fig. 8). If fixation is now shifted to the intermediate target (Fig. 9) four strings will obtrude themselves to consciousness: one pair extending in V formation from a median point between the two eyes to the two lateral targets, the other two converging from these same targets in X formation, crossing each other and extending to opposite sides of the head (Fig. 10).

It can readily be seen that the binocular visual sensations of the alternate squinters compare most closely with those of the normal projector when the latters fixation is held at the median target while that of the former is retained at one of the end targets (Figs. 2 & 5 and 7 & 10 respectively): the essential difference being that, in normal pro-

jection, consciousness of all monocular visual sensations is retained while *the squinter seems consciously aware only of those monocular sensations lying on that side of the median line of the combined visual field which contains the macular area of that eye.*

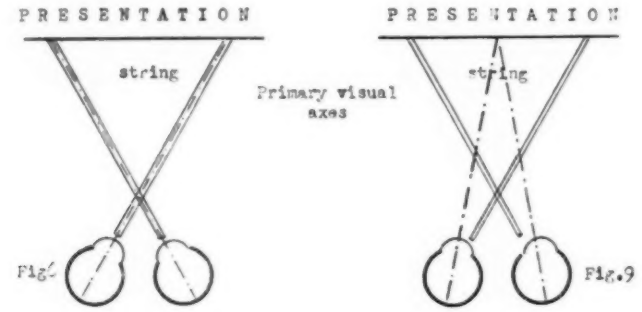

Fig.9

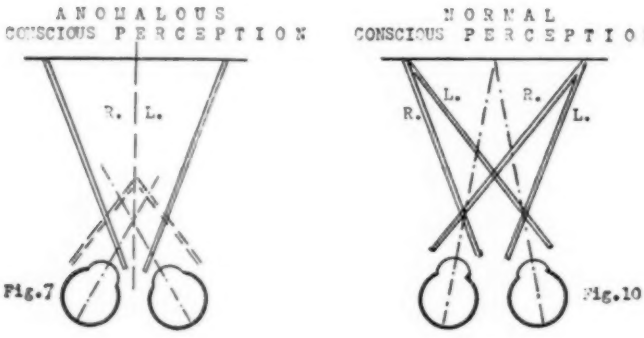

Fig.7

Fig.10

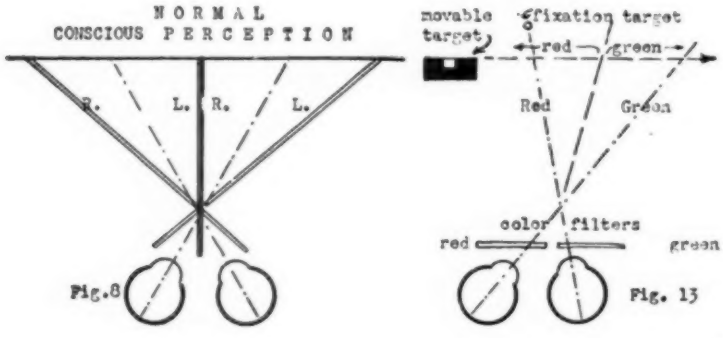

Fig.8

Fig. 13

Verhoeff expressed this peculiar behavior in more general terms as follows[2]: "During binocular vision in cases of anomalous projection, the retinal image of any object seen usually reaches consciousness only

[2] Verhoeff, F. H.: Anomalous Projection: Arch. Ophth. 19-5. page 674.

from the eye from which this particular object could be the more distinctly seen in monocular vision without change of fixation."

3. THE CROSSING POINT OF THE PRIMARY VISUAL AXES IN ALTERNATE SQUINT

A matter of greatest interest in alternating strabismus of the converging type is the crossing point of the primary visual axes. This point corresponds closely to the fixation point in normal binocular vision. It has been found that investigations of this area present unusual difficulties *because anomalous projectors have a particular aversion of viewing a single object along both primary visual axes.* Rather, they change their angle of squint to retain the crossing point at some distance nearer to the eyes. It was for that reason that I found it necessary to construct a suitable apparatus described as Brock Anomoscope in an earlier publication[3].

With the aid of this instrument two targets can be presented to the subject under investigation, each target being visible to alternate eyes only. These targets can be moved laterally against each other into positions including vertical juxtaposition. A broad black band of cardboard serving as a background may be placed from four to twenty inches in front of the patient. The targets are on this background and are supplied with fine markings which can only be discerned when macularly fixated.

The procedure of investigation was to place the targets in such positions that the markings in both targets were simultaneously discernible, the cardboard being brought ever closer to the patient from a distance well beyond the crossing point of the primary visual axes to a position well within this point. As the target-plane approached the crossing point of the primary visual axes, the targets had to be brought nearer and nearer to each other, but at no time did any alternate squinters see the targets in vertical juxtaposition when the individual markings of both targets were distinctly visible. When the two targets were actually in vertical alignment they were invariably perceived to be laterally separated. At a point considerably nearer than the crossing point of the primary visual axes there occurred a sudden reversal of targets, the left appearing to the right and vice versa as compared to the immediately preceding position (Fig. 11). If the targets were placed in *apparent* ver-

[3] Brock, F. W.: Anomalous Projection in Squint. Its Cause and Effect. New Methods of Correction. Report of Cases: Am. Journal of Optometry, V. 16, No. 8 (1939).

tical alignment, regardless of visibility, it was found that at no time could the small markings of more than one target be perceived; an indication that one of the targets had been placed beyond the macular area of the non-fixating eye. This can only mean that *alternate squinters do not, as a rule, see single objects singly at the crossing point of the primary visual axes and that they will make every effort to prevent the fixation object from falling on the macular areas of both eyes.*

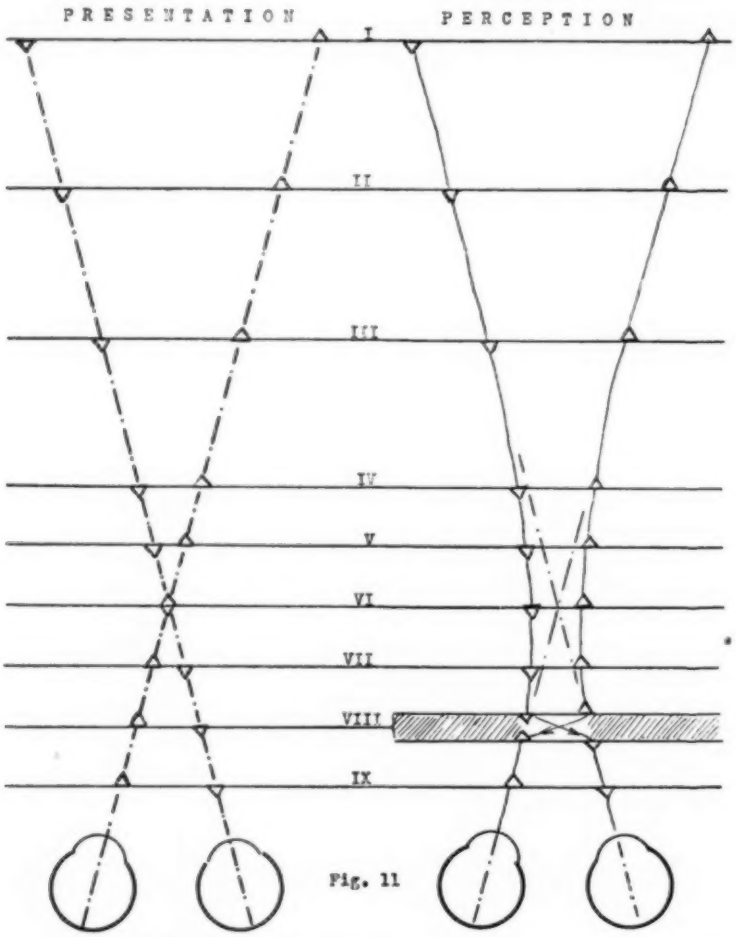

Fig. 11

Target visible to right eye only
Target visible to left eye only

4. FIXATION OBJECT AND FIXATION AXIS IN ALTERNATE SQUINT

In spite of the evident fact that there exist two more or less separated areas of clear (macular) vision in the binocular visual field of the

alternate squinter, it has been found that only one of these areas may contain the fixation object. The fixation object may therefore be defined as that object which is pierced by the primary visual axis of the fixating (the then dominant) eye. One may well assume that the fixation-axis always corresponds closely to the primary visual axis of the dominant eye. Inasmuch as there exists a very imperfect accommodation—convergence relationship in all of these cases, it may be demonstrated that the angle of squint does not materially change when the dominant eye changes fixation from a distant to a near object as long as the near object remains sufficiently beyond the crossing point of the primary visual axes to be projected in its entirety along non-corresponding retinal points. If it is now assumed that the fixation object approaches the observer along his fixation axis, it can readily be seen that the disparity between the contraocular images is gradually reduced as the object approaches the crossing point of the primary visual axes. Thus, it becomes evident that in the case of a 30° convergent squint the angular disparity of the contraocular images being 30° at infinity, will be reduced to 24° at 18 inches, 21° at 12 inches and will remain only 6° at 12 inches, assuming that the pupillary distance is approximately 50 mm. Here, evidently, the projection axis remains the same and yet, the "corresponding" visual axis of the squinting eye varies directly with the distance of the fixation object, relative to the observer. Verhoeff[4] has shown that, if a fixation object is placed in a position so as to be visible to both eyes and a near object is screened in such a way as to be visible to the squinting eye only, the two objects will be seen in alignment when the near object is placed in a position closely approximating the projection axis of the fixating eye. Yet, on complete occlusion of the fixating eye the near object will have to be shifted a considerable distance away from its original location in order to bring it again into alignment with the fixation object. It may therefore be stated that: *relative to the squinting eye, the fixation axis remains fairly constant both in position and direction but never corresponds with any of the projection axes of this eye.* Furthermore, inasmuch as the fixation object never corresponds with the object most distinctly seen by the squinting eye, it is also evident that the primary visual axis of the non-dominant eye never intercepts the fixation object. It has been found that the alternate squinter sees all objects in outer space to be in relative positions to the fixation axis even though

[4] Verhoeff, F. H.: Visual Phenomena and Strabismus—page 669.

they may be consciously perceived by the squinting eye. In other words, the projection axes of all conscious visual sensations of both eyes are transferred cortically to the fixating eye just as if the pupillary distance had been reduced to zero. In spite of this, the patient seems consciously aware of the fact that he sees certain objects with his right and others with the left eye. Conscious projection occurs only along the visual axis of that eye which actually perceives that object.

5. SUPPRESSION IN ALTERNATE SQUINTS

Inasmuch as the squinting eye furnishes nearly half of the conscious visual perceptions (if the visual acuity of both eyes is about equal) the alternate squinter must, at least subconsciously, be aware of the oT-foveal image of the fixation object, for how else could he correlate the conscious visual sensations of the two eyes? That there exists no absolute suppression in the retinal area of the squinting eye anomalously corresponding with the macular area of the fixating eye can easily be demonstrated in the following manner: if an alternate squinter is placed into an entirely darkened room and a light is made to flash intermittently at some distance in front of the patient, his conscious visual sensation is invariably that of a single flashing light. If now a red multiple maddox rod is placed in front of the dominant eye the patient at once gains consciousness of the presence of both the white light and the red band of light. He very rarely, if ever, imagines the light and the band to occupy the same place in outer space, which should be the case if anomalous retinal correspondence were present. Yet, he is equally at a loss to give any relative position of the two visual sensations. If, now, the maddox rod is removed between alternate flashes for the purpose of presenting the fixating eye with alternate sensations of a red band and a white light as fixation object, the non-fixated image of the flashing light is never consciously seen when the two retinal images of the single object are identical, but it is always in evidence when the two images are sufficiently dissimilar to prevent their recognition as belonging to a single object.

Another experiment of similar nature bears recounting because of its singular results. Two 15° square prisms were cemented together with their bases on opposite sides and with half of their surfaces overlapping. The unit consisted, therefore, of a rectangular piece of glass with three parallel sections, the intermediate section representing a plane of glass

whereas the sections on opposite sides consisted of 15° prisms with their bases forming the narrow sides of the rectangle (Fig. 12).

The patient was placed into an entirely darkened room, facing a single trans-illuminated circular target some 10 feet away. The rectangular glass slide was held in an upright position over the squinting eye so that, by moving it up and down, the non-fixated image of the illuminated disc appeared either in its actual position or variously displaced up or down.

As soon as the image was seen through either of the two prism sections, it obtruded itself to consciousness as a second (identical) object placed above or below *and to the side of* the image perceived by the fixating eye. In the intermediate position consciousness of a secondary image could only be elicited after prolonged training. This image was then found to lie in a somewhat intermediate position to the other two but usually appeared somewhat closer to the primary image. The peculiar fact remains, however, that the intermediate image, as seen through the plane portion of the slide, has a strong tendency to completely fade out almost as soon as it is perceived. However, if, with the aid of rotary prisms the apparent lateral separation is increased, the secondary image again becomes visible and is permanently retained. When the patient is instructed to rotate the prisms until the two identical targets appear in superimposition, the final prism readings will rarely exceed two or three degrees regardless of the existing angle of squint. This is a definite indication that there exists a very staple relationship between the two eyes.

6. DEPTH PERCEPTION IN ALTERNATE SQUINTS

It is evident that, somewhere in the brain, the disparity of the two contra-ocular images of all objects is registered but that this disparity does not usually reach the conscious level as long as it agrees with the usual angle of squint. It may, indeed, well be that subconscious awareness of the different disparities between the double-images of objects lying at varying distances in outer space furnishes the alternate squinter with a notably greater depth perception than that monocularly obtainable[5]. At any rate, it has been variously demonstrated that many alternators possess a decidedly better depth appreciation binocularly than monocularly, although such depth perception never approaches that of

[5] This possibility has been recognized by Verhoeff.

the normal individual[6]. If this is so, one may well believe that the presence of such lateral secondary images proves a *necessary factor* to the alternate squinter for the proper localization of binocularly visible objects. In other words, a satisfactory binocular perception of objects lying in the binocular visual field of the anomalous projector can only be obtained so long as these objects lie on *non-corresponding visual axes*. This, then furnishes an explanation for the great reluctance with which such patients view a single object located at the crossing point of the primary visual axes, and that, if such a situation is forced upon them they assume the presence of two identical objects lying along both primary visual axes somewhere beyond the crossing point. This they do consistently in preference to accepting normal unification of the identical images received along corresponding retinal points.

7. COMPARISON BETWEEN NORMAL AND ANOMALOUS BINOCULAR VISION

To those endowed with normal binocular vision, this seems a strange concept indeed, yet it need not be any more surprising than the fact that we do not conceive of our own images, when appearing in multiple mirrors, as belonging to other than our own persons. Again, should in a sunlit landscape the shadows suddenly disappear, it would cause us considerable confusion of mind because we have accepted such shadows as integral parts of solid objects. Can it, then, not be that alternate squinters accept the secondary images as integral parts of the more clearly visible images which make up their conscious visual pattern? After all, if the human brain is capable of retaining a single concept of objects lying beyond and nearer than the fusion range in spite of the fact that in these instances double-images *may* be consciously perceived, it should not be any more surprising that alternate squinters can accomplish something of the sort over the entire range of binocular vision. It is, in fact, not very difficult to establish in these subjects consciousness of the secondary image of a fixated object, but even when this is accomplished it is rarely found that such an image appears in anatomically exact position. Almost invariably it is conceived to lie much closer to the identical image seen by the fixating eye than the

[6] Bielschowsky found exceptionally with the falling ball test that squinters gave a definitely higher percentage of correct answers when both *eyes were open* than when the squinting eye was occluded. Bielschowsky, A.: Untersuchung über das Sehen der Schielenden. Arch. f. Ophth. 50:406, 1900.

angle of squint would allow. This diplopia is therefore not an indication that normal binocular vision has been attained.

8. ANOMALOUS PROJECTION, AN ACQUIRED CONCEPT

There can be no doubt that the peculiar binocular visual sensations of the alternate squinters represent an acquired concept which has been learned over long periods of time and may be subject to change whenever the situation warrants it. It has been noted that anomalous projection is not easily attained by subjects who previously had been in possession of normal binocular vision and it is therefore not surprising that such patients are exceedingly reluctant to part with their laboriously acquired anomalous visual habits.

On the other hand, I have found that when normal binocular vision is acquired after anomalous projection has been well established, the two methods of seeing may be alternately used at will and without apparent discord. This explains why the total elimination of anomalous projection is an exceedingly difficult undertaking and takes a considerable amount of perseverance and skill.

9. COLOR MIXTURE IN ALTERNATE SQUINTS

It is interesting to consider in the light of the foregoing an experiment originally described by Dr. Verhoeff and repeated with somewhat similar results by myself[7]. This experiment has been fully dscribed in my first article on anomalous projections in the February issue of 1939, American Journal of Optometry (as experiment 2 of the first series) and showed that, if a single white target is presented to a subject with alternate squint and is viewed by the patient through filters of different colors over two eyes (Fig. 13), the target is perceived singly and invariably takes on the color of the filter in front of the eye which can see the target more distinctly. Only when the target is placed into a position midway between the two primary visual axes and is therefore seen equally well by both eyes can there be demonstrated a certain amount of rivalry of color. Lustre, however, has never been definitely established. Furthermore the color interpretations vary with each individual as if there existed some doubt in each patient's mind as to the actual color of the target.

10. RETINAL CORRESPONDENCE IN ALTERNATE SQUINTS

In considering the material presented in this paper, one must come to the evident conclusion that no anomalous retinal correspondence can

[7] Verhoeff, F. H.: Anomalous Projection: Arch. Ophth. 19-5, page 673.

possibly exist in alternate squints. As a matter of fact, I have found that in most of these patients normal projection can be temporarily established before any material change in the relative position of the two eyes has taken place. Even the presence of monocular diplopia after tenotomy cannot be considered proof of the existence of a secondary retinal correspondence of normally disparate retinal points because several of my own squint patients experienced such monocular diplopia during training periods while their eyes still retained their normal angle of squint.

Neither can we accept complete absence of retinal correspondence because this would preclude such a unified binocular visual perception as is evident in alternate squints.

On the other hand, if we assume the existence of innate retinal correspondence we must also accept the presence of a horopter plane which in divergent squints is located at some finite distance behind the eyes. In convergent strabismus the horopter is in front of the eyes and subject to considerable variations due to a definite effort of the squinter to keep all objects of strong attention value some distance beyond this plane.

Whereas in normal binocular vision an effort is made to place the horopter plane in such a position as to bring the fixation object into this plane, the anomalous projector seems to make an equally determined effort to keep extrinsic objects beyond the horopter. He does this out of necessity because he not only experiences diplopia if objects are either located in or nearer than this plane but he also looses his ability to locate such objects accurately in outer space. There seems little doubt that, as long as objects are located beyond the crossing point of their primary visual axes, these patients actually perceive single objects singly at the crossing point of whatever non-corresponding visual axes of the two eyes intercept them. This may mean that they project all bi-retinal stimuli of a single object through and beyond the horopter plane to the crossing point of these projection axes. At any rate, the conscious visual perception is known to be that of a single object seemingly situated along the projection axis of only that eye which has the more distinct view of this object, yet, whose actual distance from the observer is determined subconsciously by the "invisible" contraocular image as well.

11. UNIFIED BINOCULAR VISION IN ALTERNATE SQUINTS

If such projection habits really exist, it means that proper localization of objects lying in the binocular visual field can only be accomplished if their images are on sufficiently disparate retinal points to prevent normal fusion and that the visual axes pertaining to identical images do not cross each other within the space separating the eyes from

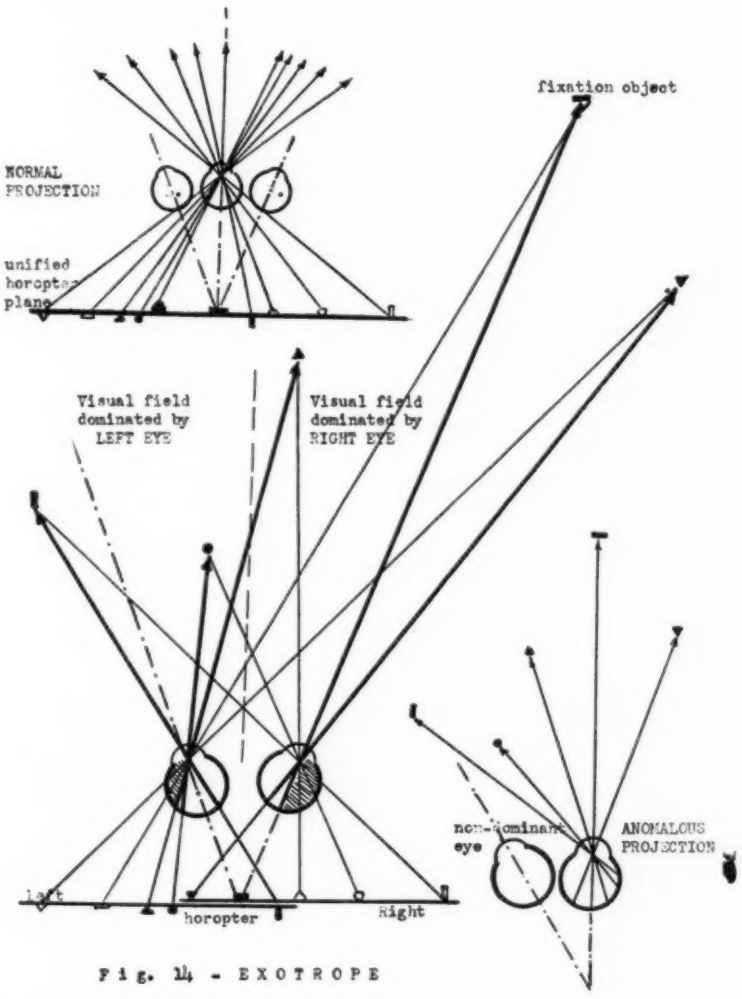

Fig. 14 - EXOTROPE

the horopter plane. This agrees well with the observations that anomalous projectors make every effort to prevent objects from being located either in or nearer than the horopter plane. It is further evident that

alternate squinters must keep their angle of squint as nearly constant as possible for proper evaluation of bi-retinal stimuli.

This concept is graphically depicted in the following two figures: Figs. 14 and 15 represent the exotrope and esotrope possessing anoma-

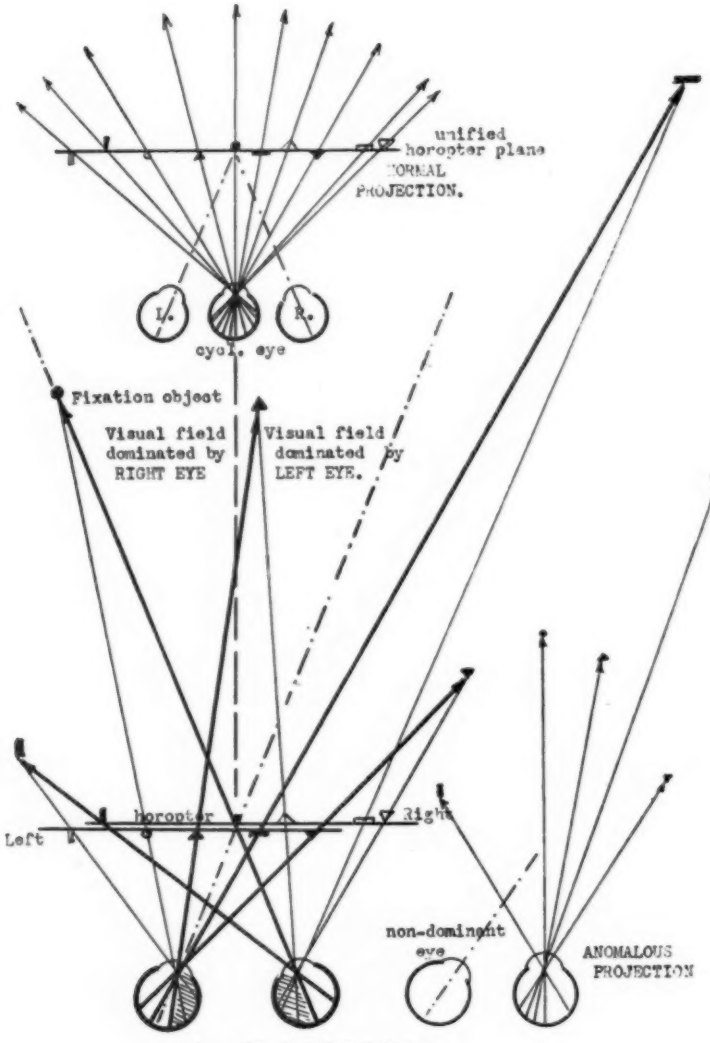

Fig. 15- ESOTROPE

lous retinal correspondence. The monocular visual axes are identical with the binocular projection axes but of the ten images of the five objects only half are brought to consciousness, namely the five which are the

most distinctly seen. The triangles extending from identical images in the horopter plane through the anterior nodal points of the respective eyes determine the distance of the object from the observer, yet the objects are consciously perceived as lying along the single projection axis of the "seeing" eye. Unified binocular vision is simply accomplished by mentally transferring the conscious stimuli of the squinting eye to the fixating eye. This eye then assumes the functions of the cyclopean eye of normal projectors (see inserts on bottom of Figs. 14 and 15).

The smaller diagrams in the upper left hand corner of both figures represent conscious perception in similar situations by normal projectors. Here projection is along single axes through the unified or cyclopean eye and inasmuch as none of the objects are located in the horopter planes, all objects are seen double and depth perception is no greater than that obtained monocularly.

The physiological and psychological brain centers capable of such accurate evaluation of two so widely different afferent sets of retinal stimuli as must occur in normal binocular vision on the one hand and of anomalous projection on the other, are unfortunately little known and must be left for later discussion. The very fact that some sort of binocular single vision in alternate squint is possible without there actually existing anomalous retinal correspondence must be of great interest to those who are concerned with the investigations of the cortical visual centers.

As has been previously pointed out by Verhoeff and myself, this anomalous type of binocular vision is not confined solely to alternate squinters but may be found in a great number of concomitant squints of all types, especially if they are of long standing. It is for this reason, that a thorough study of anomalous projection should be made by all those who undertake to cure strabismus, be it through operative or non-operative interventions.

DR. FREDERICK W. BROCK
39 VICTORY BLVD.
STATEN ISLAND, N. Y. C.

A COMPARISON OF STANDARD TESTS OF DEPTH PERCEPTION*

Neil Warren, Ph.D.
University of Southern California
Los Angeles, California

Some time ago Clark and Warren[1] reported a study of the relationship between depth perception as measured by the Howard-Dolman apparatus and proficiency in certain athletic games which obviously require accurate perception of depth and distance. These games included baseball, tennis, and basketball. The results indicated that the depth perception of the members of the varsity squads in these sports was not superior on the average to the depth perception of a control group of 456 unselected undergraduate men. Moreover, the range of scores was about the same for both groups, some outstanding athletes having depth perception on the Howard-Dolman test greatly inferior to the average. The results of this study raised a question of the validity of the test, or more exactly, its applicability to practical situations.

The Howard-Dolman apparatus requires the subject to adjust a movable vertical rod to a position the same distance away from him as a fixed rod. Both rods are the same size, and are black against a white background. Tests are made with the subject 20 feet from the fixed rod and he makes the adjustment by pulling a cord. His score is the average error in millimeters for 10 trials. The test is objective, simply administered and scored. For these reasons it has been used in various practical situations. It has been adopted by the army and navy air services and is being used by the Drivers' License Division of the Department of Motor Vehicles of the State of California as part of a battery of experimental tests.[2]

*Submitted for publication March 8, 1940.

[1] Clark, B., and Warren, N., Depth perception and interpupillary distance as factors in proficiency in ball games. Amer. J. Psychol., 1935, 47, 485-487.

[2] Mr. Edwin Fletcher of the Drivers' License Division has informed the author that, while no systematic study has been made, his observations confirm the results reported in this paper.

In the present study the Howard-Dolman test is compared with another standard measure of depth perception—the Keystone stereopsis test. The Keystone test consists of a graded series of 24 stereoscopic cards, on each of which are three rows of letters and numbers. When viewed through the stereoscope one letter or number in each row appears nearer to the eye than the others in that row. The usual principles of stereoscopic pictures are used to produce the depth. The cards are graded in such a way as to require progressively greater "stereopsis" as the series is continued.

The numbers and letters of any row vary in size from those requiring 20/20 vision to those requiring only 20/120 vision. The letter which stands out may be of any size and the subject is told that size is not the determining factor. He begins with the easiest card and continues until he cannot name the correct letters or numbers which require 20/50 vision or less. He is permitted to miss those rows in which the near figure require a visual acuity greater than 20/50. In the present study the test was continued until the subject missed two successive cards. His score is the percentage of stereopsis required by the most difficult card correctly responded to. In accordance to the directions for administering the test, the slide carrier of the stereoscope was set at a distance requiring 1.25 diopters of accommodation.

Each subject was tested for visual acuity by means of a standard Snellen test chart at a distance of 20 feet.

The subjects were 61 graduate and undergraduate students ranging in age from 18 to 53 years.

Reliability. The reliability of both tests was determined: for the Howard-Dolman apparatus by correlating odd and even trials and for the Keystone test by repeating the measure after an interval of at least one day. Under these circumstances the coefficient of reliability for the Howard-Dolman test was .93 (using the Spearman-Brown prophesy formula the reliability of the complete series of trials would be .96). The coefficient of reliability for the Keystone test was .86. The correlation between the two tests, however, is insignificant.

Intercorrelations. After correction for attenuation the coefficient of correlation was only .119. On this basis, it is obvious that the two measures are not equivalent throughout the whole range of scores. While it is true that the subject whose score on the Howard-Dolman test was

most inferior (an average error of 157 millimeters) failed the Keystone test; it is also true that the second best score on the Howard-Dolman test (an average error of 4.1 mm.) was made by a subject who failed the Keystone test. On the other hand the median score of those who failed the Keystone test was an average of 40 mm. on the Howard-Dolman, while the median for the entire group was 19 mm. The lack of agreement between the tests raises serious questions of the validity of one or both of them.

Variables Involved. While the ocular factors in both tests are fundamentally similar there are other factors which enter into the performances of subjects on each test. Both tests require judgment based upon the retinal disparity of the binocular images, and to a smaller extent upon the degrees of convergence required. In the Howard-Dolman test perspective, or relative size of the two vertical rods, remains a factor although all other monocular cues are eliminated. In the Keystone test perspective is minimized by having certain of the smaller figures appear nearer, *ie.* by opposing perspective and stereopsis. Subjects who fail on the test usually name the larger and blacker letters as being nearer to them, and are unable to perceive the stereoscopic depth of the smaller ones even when it is pointed out to them.

Some persons are unable to secure clear images at the accommodation and convergence required by the instructions accompanying the test, *ie.*, an accommodation of 1.25 diopters. The data for 5 subjects was excluded from the present study for that reason. When the slide holder was moved slightly all these subjects were able to perceive depth to an extent superior to the median of the experimental group. Their failure under test conditions was not an indication of lack of depth perception.

An extraneous factor entering into performance on the Howard-Dolman test is the method of adjusting the variable rod. The adjustment is made by pulling on a cord, hence, the eye-hand coordination of the subject plays a part in addition to his judgment.

Visual acuity was found to play an important role in performance in both tests. Each subject was requested to use whatever corrective lenses he was accustomed to. Under these circumstances 10 of the group had less than 20/20 vision. The average score for these 10 was 63 mm. error on the Howard-Dolman test as compared with an average for the total group of 26 mm.; and on the Keystone test the average of those deficient in visual acuity was 10.5 per cent, as compared with 34 per cent for the

total group. In terms of the distributions of the two tests this indicated a considerably greater effect on the Howard-Dolman. A similar effect is observed in those cases of disparity in visual acuity between the two eyes.

Conclusions. In general, it seems justifiable to conclude that these tests, though perhaps of clinical and analytical value, lack demonstrated practical validity. For practical purposes, depth perception is a complex response to many factors, of which disparity of retinal images is only one. The relative dependence upon the various monocular and binocular factors for judgments undoubtedly varies greatly from individual to individual, while the accuracy of the resulting judgments may remain equal. The excellence of the flying skill of certain one-eyed aviators, and the practical distance judgment of athletes who score poorly on the analytical tests of depth perception, attest to this conclusion.

It is probable that, for analytical purposes, both tests could be improved upon. The elimination of extraneous variables, such as muscular coordination, is of course desirable. It, also, seems desirable that the factor of perspective be eliminated if only the binocular cues are to be measured. In such a case, size should be neither an aid nor a confusing device.

It is not the purpose of this paper to determine which of the two tests is the better; nor is it possible to do so from the date presented. Both are intended to measure depth perception but do not give equivalent results. The relative values of the tests must, therefore, depend upon the purpose for which the test is used.

DR. NEIL WARREN, HEAD
DEPARTMENT OF PSYCHOLOGY
UNIVERSITY OF SOUTHERN CALIFORNIA
LOS ANGELES, CALIFORNIA

ERRATUM

In the March 1940 issue of this Journal, an article on Motorist's surveys refers on page 102 to the Ferree and Rand perimeter as being used. We wish to correct this error and state that the perimeter used was the Brombach, graciously loaned to the Minneapolis District Optometric Society by the *American Optical Company.*

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A REVIEW OF CERTAIN OCULAR CASES IN WHICH OCULAR PATHOLOGY WAS A CONTRIBUTING FACTOR*

In recent years, much has been written regarding ocular pathology. The subject, while an important one, and one which has merited all of the clinical attention it has received, is nevertheless one, which during the past decade has been greatly over emphasized and dramatized in the effort to develop a public consciousness of certain types of eye care.

While this over emphasis may have accomplished some good in making the public aware of the need for proper ocular attention, it has also developed in the minds of certain professional people a misconception as to the numerical importance of cases of eye pathology in relation to the total number of cases needing some form of eye care. In other

*The concluding paper in a series of nine, by Carel C. Koch, Opt.D., F.A.A.O., dealing with reported clinical findings.

words, the total amount of actual ocular pathology which exists at any given period, is very little indeed, and of this total, only a certain rather low percentage of these cases can, in any way, be assisted either by medical treatment or surgical intervention.

Eye men as a whole are quite aware of these facts, but one finds public health officers, political officials, nurses and social workers, both lay and trained, frequently making assertions as to the quantity of ocular pathology, far out of proportion to the actual number of these cases which do exist.

This fact is substantiated by the eminent oculist Post[1], editor of the AMERICAN JOURNAL OF OPTHALMOLOGY, who in 1937, claimed that only 25 per cent of the work of present day oculists had to do with pathologic problems. Morris[2] also points out, in the same connection, that with approximately 10,000 oculists (most of whom are eye, ear nose and throat men) in practice in America today doing the needed work in the field of ocular pathology, and 20,000 optometrists taking care of only ocular neurological and refractive problems, that the average ratio of ocular pathologic cases to ocular non-pathologic cases is 1 to 11½. In other words only 8 per cent of the ocular work done in America today has to do with medical or surgical treatment of the eye.

This fact is further emphasized by a recent editorial appearing in the WISCONSIN MEDICAL JOURNAL. The editor of this publication is discussing the educational training of both oculists and optometrists and is reviewing a suggestion that a total of 30,000 oculists be trained to serve the visual needs of Americans. The editor finds this suggestion impractical and unsound. One of his reasons being the lack of clinical material with which to train the suggested new oculists and also the lack of patients requiring their services should they be trained. In this connection he says, "The greater part of the refraction in this country is done by about 30,000 men of whom only a third are ophthalmologists. The other two-thirds are optometrists and general practitioners. In order to secure enough ophthalmologists to go around, 20,000 more would have to be trained. Facilities for post-graduate instruction in ophthalmology are so limited that even the men now in training find it difficult to secure adequate courses."

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[1] Lawrence T. Post. An eight months' course. American Journal of Ophthalmology. December, 1937, pages 1261-1262.

[2] Clarence W. Morris. The problem of specialization. The Optical Journal and Review. October 1, 1939, pages 18-23.

This editor further adds, "To train any such additional number as 20,000 is manifestly impossible. Even if it could be done it would not be desirable. Were there to be any such tremendous increase in the number of opthalmologists there would be nowhere near enough eye diseases to go 'round. Only a few men would see enough to acquire or keep any proficiency in anything but refraction. Nor is anything to be gained by the entrance of the general practitioner into the field. His duties are now so manifold that he has no time to develop or keep skill in refraction. It should also be well understood that to refract adequately is not easy. Refraction with its kindred subjects constitutes a whole science and one could easily spend years of his life in its study without thoroughly mastering it."

It is therefore established beyond the element of doubt, that of the total amount of ocular work which must be done, but little is in the realm of treating eye disease. This portion, however small, is nevertheless of considerable interest and importance to us as optometrists as these cases are in part at least potential candidates for future blindness, or at least possibly doomed to some unsatisfactory indefinite period of suffering and possible sub-normal vision. While it is true that in the initial stages, these patients should and must be under the diagnostic and therapeutic care of oculists, we as optometrists have a definite interest in the manner in which these patients are treated and the success which these patients experience as the result of the surgical and medical therapies which are prescribed. As the clinical case reports which are included in this paper will show, many of these patients, after finishing the basic medical or surgical work which was prescribed for them, find it necessary to turn to optometrists to regain useful vision, and it is in this particular that we as optometrists have a proper right to be concerned as to the handling of these few cases of ocular pathology.

Before turning to the case reports themselves, let us briefly review the type of ocular pathologic cases most frequently encountered in doing this work. In his analysis of 50,000 visual patients examined by the National Eye Service, the oculist Bishop Harman[3], divided these total cases into 19 special groups. Of these, only 7 in any way touch the field of eye pathology. The remaining 12 classifications having entirely to do with non-pathological refractive or neurological ocular conditions. The 7 categories of Harman, in which would be found some cases of both

[3] Bishop Harman. Analysis of 50,000 cases. The Optician. February 17th. 1939, page 33.

ocular abnormality as well as cases of ocular pathology are as follows, in the order in which the cases appear in numerical frequency. (1) Cataract. (2) Conjunctiva, lids and orbits. (3) Constitutional diseases affecting the eyes not otherwise catalogued. (4) Uvea. (5) Cornea. (6) Optic neuritis or atrophy, and (7) Glaucoma. Harman's figures do not go into sufficient detail to classify the totals of those cases in any group in which something useful could be done, from those cases in which nothing of value was attempted. The entire totals, however, for the full seven groups are amazingly low, considering the source of the data, and these figures, too, indicate the really small number of cases suffering from ocular pathology of one kind or another.

Taking the cases mentioned in the order in which they most frequently appear, we find cataract leading the list. This is quite natural as every case showing any striae or opacity of the crystalline lens whatsoever would be included, irrespective of the degree of the lenticular involvement. While there is perhaps some justification for this diagnosis, it does most certainly lead to faulty conclusions, as but few of these cases ever mature to that point wherein vision is seriously involved, and but very few of these ever develop to the place where an operation is advised. The greater majority of these cases are merely kept under observation and aside from the correcting of existing errors of refraction by means of glasses, nothing else is done. In most of these cases the patient is unaware and uninformed of the presence of the lenticular opacity.

The second classification of this pathological grouping consists of cases in which there is an involvement of the conjunctiva, lids and orbits. From a clinical standpoint these cases are as a rule fairly minor matters. Most of these cases are infections which are readily correctable by usual medical therapeutic techniques. The third classification has to do with cases in which the eyes are involved as a result of some remote general somatic condition. Here it becomes the duty of the examining oculist to work in close conjunction with the internist and other diagnosticians to locate and remove the basic cause or causes of the involvement. The fourth classification has to do with the pathology of the iris, ciliary body and uveal tract. Syphilis and focal infections play important parts in these cases of ocular pathology. The fifth classification has to do with diseases of the cornea. These are also usually reflex conditions due to the general poor health of the patient and focal infections. The sixth classification has to do with optic neuritis or optic atrophy. These diseases affecting the eye are, as a rule, due to syphilis again or to multiple scler-

osis, while the seventh classification, being those cases suffering from glaucoma, a very serious eye disease, whose origin is still obscure.

It is therefore evident that at least certain of the diseases of the eye are due to causes located, not in the immediate ocular region, but in the body itself and the diagnosis of these abnormalities frequently requires the assistance of several specialists. After a diagnosis has been made the immediate treatment procedures are instigated and continued until the progress of the disease itself is checked. When this point has been reached, the case is then ready for whatever visual remedial measures are necessary to return to the patient as high a level of useful vision as is possible. As the following case reports will show, it is at this point that optometrists are frequently called in to assist. Many optometrists are particularly well qualified to carry on these visual rehabilitation techniques which are so necessary in these cases of ocular pathology. The following brief reviews of previously published cases, are but few of the many that could have been included in this report. All have been taken from established sources of technical literature and all were originally written by competent eye specialists.

Case Report No. 124.

Jaeckle reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 13, No. 12, p. 457. Patient, female, age 46. Suffering from subnormal vision for the past eight years. Can not read. Her left eye had been blind from infancy and now turned out. Patient had been under the care of an oculist but no correction had been prescribed for the right eye. The optometrist Jaeckle examined this patient. He found the uncorrected visual acuity of the right eye to be O.D. 20/65. His examination further disclosed the eye to be affected with corneal nebulae and cataract. A multi-aperature spectacle was prescribed which enabled the patient to read.

Case Report No. 125.

Barrett reports the following case in the REFRACTIONIST, Vol. 28, No. 500, pp. 272. Patient, male, age 50. Had been certified as blind. Had a history of failing vision since the age of 20. He was wearing a +12.00 D. Sph., before the right eye which gave him a distance visual acuity of 2/36. With a +20.00 D. Sph., before this eye he could read large print at 6 cm. but found this very uncomfortable. The patient wished to have some sort of assistance which would enable him to read with greater comfort. The optometrist Barrett examined the patient and

found both the corneas to have extensive opacities. There was no useful vision in the left eye. In the right eye, however, Barrett found that the upper part of the cornea was unaffected and that some view of the fundus was possible. A telescopic spectacle arrangement was devised which enabled the patient to read the smallest print with ease.

Case Report No. 126.

Salov reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 12, No. 5, pp. 176-180. Patient, male, age 32, who had suffered with sub-normal vision for the past ten years. His uncorrected vision was O.D. 20/50. O.S. 20/200. Had had all kinds of ocular treatment by several oculists with no improvement in his vision. The optometrist Salov made a slit-lamp investigation of the patient's eyes and found a lenticular cortex involvement in the right eye. Also an involvement of the stroma layer of the cornea of the left eye. A diagnosis of keratoconus was made for the left eye and a contact lens was duly fitted. After the patient had been taught to handle and wear the contact lens the vision in this eye improved to 20/25 for distance and he could read normally.

Case Report No. 127.

Marton reports the following case in the BRITISH JOURNAL OF PHYSIOLOGICAL OPTICS, Vol. 13, No. 1, pp. 21-32. Patient, female, had contracted fever while living in the tropics which in time affected the eyes. This happened twenty-five years ago. Oculists had informed the patient that the disease had run its course and the remaining sub-normal vision was very low. One eye had lost form vision and the other did not respond to conventional refractive treatment. Under the direction of the optometrist Marton, spectacles were made for this patient with a vulcanite disc for the useless eye and a +15.00 D. Sph. for its fellow and with these she was able to read the print of her telephone directory.

Case Report No. 128.

Feinbloom reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 13, No. 8, pp. 306-311. Patient, male, age 46. Owing to an involvement of the bulbar conjunctiva and cornea the patient was operated on in both eyes at the age of nine. These operations were not successful and the patient was totally blind for three years. A series of additional operations were then performed and at the age of 14 the patient had light and dark perception only. He attended an Institute for the Education of the Blind and there learned to read Braille. Through

a paid reader, the patient later undertook the study of law and became a member of the Bar. A number of oculists had worked on his eyes without giving him any improvement in his vision. The optometrist Feinbloom examined the case. After a period of visual re-education telescopic spectacles were prescribed for his distance vision. These gave him the following visual acuity, O.D. 5/175. O. S. 10/200. His near-point training then began and in time, microscopic spectacles were prescribed which enabled him to read the type in a newspaper, with his left eye.

Case Report No. 129.

Barrett reports the following case in the REFRACTIONIST, Vol. 28, No. 494, p. 19. Patient, female, age 69. Had a cataract in each eye and the left eye had been operated upon unsuccessfully some years ago. There had been no improvement in vision after the operation and the patient had been assured by several oculists that nothing more could be done for her. The optometrist Barrett found in the right eye an extensive central opacity of the lens and vision was 1/18 which could not be improved. The left eye showed considerable opacity in the pupillary area and vision was so reduced that the 60 meter letter could not be recognized at 1 meter. After considerable experimental testing the visual acuity of the left eye was improved with the following correction to 3/24, which was a sufficient improvement over her uncorrected vision to give her much pleasure.

O.S. +13.00 D. Sph. ⌒ —2.50 D. Cyl. axis 90.

Case Report No. 130.

Ryer and Hotaling report the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 10, No. 1, p. 1-4. Patient, girl, age 7. Patient entered kindergarten at the age of four and when first seen by the optometrists Ryer and Hotaling was seven. She had very low visual acuity and managed to do her school work by being permitted to go within three feet of the blackboard and by holding her reading four inches from her eyes. During this period the parents had consulted four oculists, each of whom, had urged an immediate operation. Examination disclosed a case of bilateral crystalline lens displacement, each crystalline displaced outwardly so that its inner margin cut approximately through the center of the pupillary foramen. As the patient's parents had decided definitely not to operate, Ryer and Hotaling prescribed the following correction which enabled the patient to read at the normal distance and see her work on the blackboard with no difficulty.

O.D. —6.00 D. Sph.
O.S. —6.00 D. Sph.

Patient was also instructed to avoid all play or work which would tend to jar the crystalline lenses loose, to have monthly rechecks made of her ocular condition and also to have comparative slit-lamp studies made of the interiors of the eye at least every six months. A later report on this case indicates that the optometric techniques which followed have proven to be very satisfactory.

Case Report No. 131.

Cohen reports the following case in the 1934 YEAR BOOK OF THE NEW YORK STATE OPTOMETRIC ASSOCIATION, p. 259. Patient, female, age 24. Occupation housewife. Her chief complaint was poor vision and pain in the right eye. Her vision had been poor since early childhood. Had used glasses at the age of 8, these glasses somewhat improving vision. At the age of 14 the patient discovered that vision in the left eye was much worse than in the right. With her parents she then consulted an oculist, who advised her mother that she was malingering. Later the patient was taken to a clinic where one physician suggested an operation. This was never performed. The optometrist Cohen examined the case and made a diagnosis of keratoconus, and prescribed contact glasses which gave the patient 20/30-2 vision.

Case Report No. 132.

Jaeckle reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 12, No. 5, pp. 195-207. Patient, male, age 17. For the past 15 years this patient had been an inmate of an institution for the blind. He had no useful vision and was familiar with but several letters of the alphabet. He had a case history of sore eyes in infancy: surgical interference after which light perception was achieved; admitted to the institution at 17 months of age. Frequent ocular examinations by staff oculists during which periods, lenses were tried, but never prescribed; no persistent or successful treatment. The optometrist Jaeckle examined the case and found the right eye to be totally blind. The left eye had a partial conical staphyloma of the cornea with an anterior synechiae. Only one-sixth of the cornea was clear. The pupil was irregular, the lens could not be seen suggesting a luxation. There were floating opacities in the vitreous and disseminated old chorido-retinal lesions. Educational and ocular development, with the aid of telescopic spectacles brought the vision of the left eye up to 10/80 for distance, and up to the point where

he could read 10 point book type during the nine month period covered by the report.

Case Report No. 133.

Marton reports the following case in the REFRACTIONIST, Vol. 28, No. 498, p. 201. Patient, male, age 46, suffering from cataract and myopic astigmatism. The cataract was considered by his medical advisers unsuitable for surgical treatment and the correction for the ametropia was of no material help in obtaining vision. When first seen by the optometrist Marton, the patient was using a +12.00 D. Sph. hand magnifier to enable him to read. His distance vision was O.D. 2/60. O.S. 2/36. After several treatment corrections Marton was able to enable him to read the No. 1 type of the Swann-Cole chart with the following correction.

O.D. +20.00 D. Sph.
O.S. +20.00 D. Sph.

Case Report No. 134.

Salov reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 11, No. 5, p. 193. Patient, male, age 74. Was examined six years ago by an oculist and was told he had glaucoma in both eyes. He was treated for this condition for two years without any apparent help. He then went to consult a second oculist, who told him he could not improve his vision. The patient complained that for the last fifteen years he had not been able to read even the largest headlines in the papers. He felt that he could manage sufficiently well to go about in the street by himself but he wanted to read, if at all possible. The optometrist Salov prescribed telescopic spectacles for near-point work and the patient now reads all sizes of print with comfort.

Case Report No. 135.

Basu reports the following case in the OPTICIAN, Vol. LXXV., No. 1949, p. 445. Patient, male, age 18. He complained of headaches and a floating sinuous image in front of the left eye. He consulted an oculist, who used a cycloplegic in making his examination. The oculist claimed to be unable to prescribe for him and made a diagnosis of an opacity in the lens of the left eye. The patient being unsatisfied with this service called on the optometrist Basu for an examination. As a result of the ophthalmoscopic examination made by him a diagnosis of persistent hyaloid artery was made for the left eye. There were no lenticular opacities present. This diagnosis was verified later, on several occasions, by the

eye staff of a large hospital. As nothing could be done for this condition, glasses were prescribed to correct the patient's astigmia and slight hyperopia.

Case Report No. 136.

Neill reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 10, No. 4, pp. 128-129. Patient, male, age 50, who has been suffering from a chronic blepharo-spasm for the last five years. He has had an operation performed in which the seventh cranial nerves, palpebral branch, were partially severed. This helped relieve the spasms although the patient still suffered at intervals. The optometrist Neill fitted ptosis crutches to assist the patient and reports that they proved so successful in reducing still further the severity of the spasms that the patient wears them constantly.

Case Report No. 137.

Feinbloom reports the following case in the 1932 YEAR BOOK OF THE NEW YORK STATE OPTOMETRIC ASSOCIATION, p. 107. Patient, male, age 18. At the time of making this report the case was under the care of Dr. James H. Drakeford, optometrist of New York City. Feinbloom called in consultation. This case presented a history of acute ethmoidal sinusitis at the age of 9. This resulted in a retrobulbar neuritis. A secondary optic atrophy resulted in a short time, causing a considerable loss of central vision in the right eye, with complete blindness in the left eye. Patient had had opinions and treatments from oculists in all parts of the country. The patient, however, was best pleased with optometrist Drakeford's correction which gave him twelve per cent vision in the right eye. The correction then being used was as follows:

O.D. +2.00 D. Sph. ⌒ —0.50 D. Cyl. axis 90. After several hours of patient practice and instruction extending over several visits, the optometrist Feinbloom was able to improve the patient's distance vision to twenty-five per cent of normal. This was done with the aid of Subnormal Vision lenses (Telescopic Spectacles). The patient had been unable to read printed material for the past nine years, and with a suitable reading addition to these Sub-normal Vision lenses, of +10.00 D. Sph. for fine newspaper print, +6.00 D. Sph. for textbook print and +2.00 D. Sph. for printed pictures, marked improvement was attained in his near vision.

Case Report No. 138.

Marton reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 10, No. 1, p. 22. Patient, housewife, age 70. Patient's left eye was blind and the right eye showed lenticular opacities in a somewhat advanced state. Two oculists had advised her that she should do nothing but wait until the cataract had developed to a point that surgical attention could be given that eye. The uncorrected vision in the right eye was but 10 per cent. The optometrist Marton prescribed a correction for the right eye using anti-actinic absorption glass and in a few months the vision of the right eye was 95 per cent normal. The lenticular opacities had largely cleared up and the need for an operation was gone.

Case Report No. 139.

Dieman reports the following case in the OPTOMETRIC WEEKLY, Vol. 29, No. 30, p. 896. Patient, female, age 35. At the age of 15 this patient had trachoma. She reports being completely blind for eight months. Medical attention improved her condition so that she could see dimly with her left eye. She has had several operations which in a large measure relieved the pain but the vision was not restored. The optometrist Dieman prescribed a contact lens for the left eye which enabled the patient to see distant objects more clearly and also enabled her to do some near-point work for the first time in twenty years.

Case Report No. 140.

Smith reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 10, No. 6, pp. 217-218. Patient, male, age 62, was operated on for vertical strabismus by his oculist. The operation proved unsuccessful and a ptosis of the right lid developed immediately following the operation. With his right lid closed the diplopia was relieved, but the patient wanted to use both eyes in the normal manner. His oculist told him that there was little he could do and the patient consulted the optometrist Smith to get further assistance if possible. Smith prescribed the following correction made up in a frame with attached ptosis crutches for the right lid. This correction relieved his diplopia and enabled him to use both eyes with comfort.

O.D. +0.50 D. Sph. ⌒ +0.75 D. Cyl. axis 180 ⌒ 3△ Base-Down.

O.S. +0.25 D. Sph. ⌒ +0.75 D. Cyl. axis 180 ⌒ △3 Base-Up.
Addition for near work O.U. +2.75 D. Sph.

Case Report No. 141.

Barrett reports the following case in the REFRACTIONIST, Vol. 28, No. 494, p. 19. Patient, male, age 25. In this case vision had begun to deteriorate at the age of 18. Medical treatment had not cured the condition, and the patient now had central scotoma in each eye which reduced his distance vision to 3/36 and made near work impossible. Patient wanted help at the near-point if possible. The optometrist Barrett examined the case and prescribed the following corrections which improved his distance vision slightly and enabled him to read small print without discomfort.

Distance correction
O.D. +0.75 D. Sph. ⌒ —1.75 D. Cyl. axis 15.
O.S. —1.50 D. Cyl. axis 180.
Reading correction
O.D. +4.75 D. Sph. ⌒ —1.75 D. Cyl. axis 15 ⌒ 6△ Base-In.
O.S. +4.00 D. Sph. ⌒ —1.50 D. Cyl. axis 180 ⌒ 6△ Base-In.

Case Report No. 142.

Kurtz reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 6, No. 11, pp. 646-647. Patient, housewife, age 52. Patient claimed that she had been blind in her left eye for several years and that she had been losing the sight of the right eye for the past few months. She claimed to have visited several oculists during this period but nothing was done, and she was informed that nothing could be done to save the sight of the right eye. The right eye was corrected as follows:

O.D. —4.00 D. Sph. ⌒ —4.00 D. Cyl. axis 180. V.A. = 10/200.

An opthalmoscopic examination revealed an optic atrophy of the optic nerve of the left eye. The fundus of the right eye was apparently normal except for a slight cupping of the disc. The case was carefully refracted and kept under observation for some time, during which period certain orthoptic procedures were carried out by the optometrist Kurtz, who also prescribed several temporary treatment corrections to improve the visual acuity of the right eye. Five months after her first visit to Kurtz her corrected visual acuity for the right eye was 20/40, using the following correction.

O.D. —4.50 D. Sph. ⌒ —4.50 D. Cyl. axis 30.

Case Report No. 143.

Marton reports the following case in the BRITISH JOURNAL OF PHYSIOLOGICAL OPTICS, Vol. 13, No. 1, pp. 21-32. Patient, female,

who was suffering from a post irido-cyclitis that had been active some twelve years ago. She had received the conventional treatment at the hands of her oculist. The optometrist Marton found both pupils very reduced in size, opthalmoscopy difficult and field tests unsatisfactory. Slit-lamp inspection of the anterior chamber indicated that no pathological inclusions were present, but trans-scleral transillumination with the Wurdemann instrument revealed an uneven thinning of the iritic tissue. Near-point methods of testing enabled Marton to prescribe the following correction which enabled the patient to read small type.

O.D. +25.00 D. Sph. ⌒ 19△ Base-In.
O.S. +23.00 D. Sph. ⌒ 16△ Base-In.

Case Report No. 144.

Neill reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 10, No. 4, pp. 116-117. Patient, male, had suffered for some years from a condition variously diagnosed by different oculists as acute conjunctivitis, trachoma and other conjunctival pathology. He had been subjected to a large number of operations which consisted at first in the use of roller forceps and later in the complete removal of the conjunctiva, which latter operation resulted in the necessity of grafting of mucous tissue from the mouth to form a new conjunctival membrane. As a result of the many operations it was finally necessary to enucleate or remove one eyeball. In the other, the scar tissue resulting from the mucous graft caused an entropin of the lower lid and also a slight entropin of the upper lid, which greatly increased when the patient made an effort to open his eye. In fact, the condition became so severe that the levator muscles of the lid could raise the upper lid but slightly. The end result of the entropion of the lid was the formation of corneal ulcers which gradually so scarified the cornea that corrected visual acuity was only 20/200 and the pain caused in opening the eye was so great that the patient was content to keep his eyes closed and see nothing. It was necessary for him to be led about. Neill discovered that by applying pressure on the upper lid at the point where the fold of the lid appears in a normally opened eye, that the lid would thus be held away from the globe of the eye and also be raised so that the patient could see. This also gave the patient considerable relief from pain. The optometrist Neill constructed a special ptosis crutch to be attached to the patient's glasses which completely relieved the condition and enabled him to get about without assistance.

Case Report No. 145.

Prince reports the following case in the DIOPTRIC REVIEW, Vol. 39, No. 2, p. 187. Twelve months before consulting the optometrist Prince, the patient, male, had suffered from a facial paralysis. At the time of the optometric examination he was found to be suffering from 5△ of uncorrected left hyperophoria. A prismatic correction relieved his ocular symptoms.

Case Report No. 146.

Jaeckle reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 10, No. 6, pp. 207-208. Patient, housewife, age 28. The following correction had been prescribed by an oculist which gave the patient only 20/50 vision.

O.D. —7.00 D. Sph. ⌒ —0.50 D. Cyl. axis 90.
O.S. —6.00 D. Sph. ⌒ —0.50 D. Cyl. axis 90.

The optometrist Jaeckle prescribed telescopic spectacles for distance vision with special reading attachment which gave the patient normal vision at both distance and near. The patient was found to be suffering from a bilateral involvement of the posterior cortex of the lens. The telescopic spectacles used as a supplement to her regular glasses proved to be entirely satisfactory.

Conclusions

1. The cases of ocular pathology reviewed in this report indicate that many optometrists are well trained in the intricate and specialized work of visual rehabilitation.

2. These cases also indicate that medical training, while necessary to arrest the development of ocular pathology is not in itself fully adequate to restore to many cases of sub-normal vision the full and satisfactory level of visual acuity necessary to enable the patient to take a useful place in society.

3. The sub-normal visual aids as employed by many optometrists are the necessary appliances which must be used to supplement the work of the oculist in many cases of ocular pathology.

CAREL C. KOCH.

ORGANIZATION AND JURISPRUDENCE

by Clarence W. Morris

A department in which some of the organization problems of Optometry will be discussed and in which certain of the legal aspects of refractive work will be reviewed.

PUBLIC RELATIONS VERSUS PUBLICITY

A year ago when the agitation for the adoption of public relations began to receive some national recognition, certain optometric periodicals opposed the movement and consistently treated public relations editorially as if it were just a form of publicity. The writer attempted to meet this argument in an article entitled, *"Public Relations Is Not Advertising,"* which appeared in the INDIANA OPTOMETRIST, June 1939. We quote from a discussion of two editorials which appeared last year. "As one reviews these editorials in which two divergent points of view are presented, one finds one element common to both sides of the controversy and that is that neither side recognizes the difference beween 'Public Relations' and 'Publicity'." We quote again from the same article, "Between the concept of 'Public Relations' and 'Publicity' there is a world of difference and a world of confusion if we fail to recognize the difference. The field of public relations is to the field of publicity as the whole is to the part. The public relations counselor is to the publicity man as the optometrist is to the optician. Many public relations programs contain no publicity. A publicity program is a very narrow and limited form of a complete concept of public relations." It seems that a generous trail of committee, editorial and group discussion is to be the road by which these differences are brought to a place of recognition by a preponderance of our profession.

The assertion that many public relations programs contain no publicity may give rise to questions. In fact, it was only a few weeks ago that one editor inquired as to what service, other than publicity, does optometry need? We believe that there exists even today a definite lack of knowledge as to exactly what a public relations counselor could do for optometry. It has been urged upon optometry that its only need is press agentry—just a bit of publicity. Press agentry can never, in our judgment, substitute for public relations and no optometrist who is sincerely devoted to the cause of optometry and who knows the difference between publicity and public relations will urge upon optometry the thought that we need *only* publicity.

A high pressure press agentry may not be so effective as some think. We quote from an article entitled "Publicity Pressure" which appeared in PRINTER'S INK April 27, 1939 (page 91), "The flood of press releases that inundate the average editorial desk makes April on the Mississippi seem like a summer drought. In this flood, to be sure, are a number of items of legitimate news interest, but as time goes on the items which can be of intense interest only to the companies that issue them are increasing in volume."

The article continues, "Most publishers continue to treat publicity items in the same manner they have always treated them. They winnow out those which they feel have no real reader interest. They cannot help, however, resenting the pressure tactics of advertisers who mistake press agentry for public relations." From this we observe that optometrists and the editors of some optometric periodicals are not the only ones who fail to understand the difference between public relations and publicity or press agentry. If optometry appreciates the difference between these two concepts, it will not be content merely to add a bit to the already swollen tide of press releases—most of which ultimately reach the editorial waste paper basket. Aside from and in addition to this there are, however, activities peculiar to the realm of public relations which can assist in bringing optometry to the place it deserves among professions.

There is a very vital and essential form of public relations activity which involves no publicity whatsoever. This is rather complicated and difficult to explain satisfactorily where one is limited as to space. We offer a partial explanation by quotation from the former article to which we have previously referred, "The essential public relations activity is by far the most important. One large corporation of which I have knowledge spent in one year three million dollars for this type of service alone and not one cent of this vast sum went into that which greets the eye from the printed page. The central idea in this particular type of service was to locate the key men in any organization or movement from which a specific response or definite form of cooperation was desired. Next, the public relations counselor selects the most appropriate avenue by which to contact these key men. He will select one who can approach the party in question upon the most intimate terms."

"In this field of public relations the counselor may appear to be a worker of miracles, but underneath the surface it is a highly scientific procedure of social adjustment. For example, the negotiations, combinations, and agreements by which a certain project is advanced in your church or

lodge represents the same functions on a small scale. In your local lodge you know the key men and how to influence them in friendly conversation. When it comes to national affairs, however, a group will not know many of the key men in other groups with which they are in contact. Therefore, they employ a public relations counselor who makes it his business to know the important key men in all national organizations and corporations. While thousands of capable men are found in the field of publicity, the number of first-rate public relations counselors is very limited. Only a few men can acquire the multiplicity of national contacts which constitute the stock in trade of a public relations counselor."

"It is obvious that the value of a public relations counselor depends upon the number and scope of his contacts in the political, social, financial and professional spheres of our national life."

Another instance of functions discharged by a public relations counselor other than publicity is found in the following quotation from the same article. "The manufacturers of a certain type of textiles employed a public relations counselor to create a demand for their cloth. The counselor went to Paris and induced art designers to put out a number of style patterns calling for this particular kind of cloth. A demand for this special cloth was stimulated at home which resulted in more sales for the manufacturers."

In a recent interview with the public relations counselor of one of the largest corporations in Indiana, the writer discovered another type of public relations activity which is distinct from "press agentry." This specialist informed the writer that one of the principal duties of a public relations counselor who represents a college or university is to secure endowments for the school. This too is a form of work that is needed in optometry today. If the Los Angeles educational resolution which created the Educational Council, becomes effective in 1942, then it will be necessary that every independent optometry school have a cash income separate from tuition, preferably from endowments, equal to half the total income of the school, as required by the Association of American Universities. In one large private optometry school this represents approximately $90,000 per year or the equivalent of a cash endowment of about two million dollars. On this basis how many private optometry schools can optometry support? Regardless of the disposition of the present resolution, this financial problem of endowments is the most important single item in the problem of optometry. It is more important

than publicity. In fact, the very existence of optometry, ultimately is predicated upon what is done with this important consideration. And what, officially, is being done about it? The adoption of public relations, the presentation of the contribution of optometry to public welfare by influential lay writers in our national magazines and the liberation of optometry from discrimination are all preliminary steps leading up to the solution of this one most vital and essential problem. There is no permanent place or security for optometry in the social order until the educational institutions of optometry are placed on a solid financial basis where academic equality with other professions is assured beyond any possible question.

It would be well if the rank and file of optometrists understood the financial aspects of our educational problem but it is primarily important that the leaders and editors of the profession understand it. The best statement of this problem is found in a pamphlet published by the Association of American Universities. We quote, "The financial status of a college is of very great importance. Adequate financial support by making the institution relatively independent of student fees helps to relieve the institution of the temptation to accept or to continue on its rolls students of poor academic quality. Such support makes possible a stronger faculty, more ample facilities, and greater permanence in the maintenance of high standards. The minimum annual income for an acceptable college, exclusive of payment of interest, annuities, etc., should be sufficient to support fully the program which the college offers. In general at least half of its income should be derived from stable sources other than student fees, preferable from permanent endowments." We reiterate that the repeal of the Los Angeles resolution cannot solve this problem. The problem remains. The educational institutions of optometry must be financed by contributions from optometrists or by endowments until such time as optometry, having been adequately presented to the public as essential for specialization in health work, secures financial support through taxation for its schools in recognition of its contribution to the conservation of vision and health.

In the conference of the writer with the public relations counselor previously mentioned, this gentleman brought forth the idea that one of the most important values of a public relations counselor is that of integration and correlation. For example, the Allies lost the Dardanelles campaign in the previous World war due to lack of coordination in the opinion of some military authorities. At that time the navy, army and

aviation service were separate units. The loss of this particular military operation was due to lack of integration between the several branches of military service. We note that in the present war all forms of military, naval and aviation activities of the Allies are now under one head in order to secure coordination. Likewise the coordination of the several activities within the optometric organization is essential for efficiency and economy.

Another service which a Public Relations Program could render optometry in addition to mere publicity is the handling of the problem of commercialism. The persistence of this problem in optometry is a defensive reaction against unfair discrimination and against a situation in which the professional optometrist must compete with others in his own field wth the handicap of unequal economic opportunity. A public relations program should remove the discrimination and give equal economic opportunities to the professional optometrist. This fact will make possible a natural and voluntary elimination of the last vestiges of commercialism. Just how will press agentry or publicity alone solve a problem as complicated as this one?

Because of the confusion between the concept of "Public Relations" and "Publicity" the case against the adoption of Public Relations was prosecuted last year in the optometric press on the grounds that the multiplication of mere publicity about optometry would not do much good as long as the present scale of commercialism exists in some places. Such arguments are yet valid against the use of press agentry alone which would have little or no contribution to make by way of elimination of the undesirable factor. Such argument is misleading in reference to public relations since that type of program seeks to eliminate the undesirable factors.

We have given considerable attention to the fact that there is difficulty in understanding the difference between publicity and public relations. Then perhaps this confusion is further intensified by the fact that "publicity" itself may be subject to considerable variation. Since it has been contended by some that it is publicity and not public relations that optometrists desire, it may be helpful to ask just what conception of publicity does this alleged decision of optometrists involve? Which of the following, or what combination of the same, constitute "publicity"?

(a) A news story in the home paper that Dr. Jones is attending the state optometric convention.

(b) A news story that Dr. Smith in speaking before an optometric convention announced this or that sensational scientific discovery.

(c) A convention story, election of officers, place of next meeting, etc.

(d) A photographic display in one of the pictorial magazines comparable to the dental pictures which appeared in LIFE.

(e) Feature articles by well known writers in national magazines comparable to the article by Mark Sullivan in the READERS DIGEST of last year entitled, "When I Need Relaxation." This article told in a very effective manner the contribution of osteopathic profession to society.

We take it that a publicity program may mean in some quarters largely press agentry (a), (b), (c), some of (d) and very little or none of (e). Another conception of a publicity program may be largely (e) with a moderate amount of (d) and a minimum of (a), (b) and (c).

In the writer's opinion the latter conception of publicity is the most effective. A publicity program which consists largely of articles by well known lay writers in national magazines will be more effective in telling the story of optometry to the public than a publicity program which consists largely of mimeograph press releases mailed to editors whose desks are piled high with hundreds of like releases from other sources.

In a press release of optometric activities from a press agent there are distinct limitations as to what can be said. There is much that we optometrists would like to tell the public which cannot be said in a press release because it would be just propaganda to a news editor. But the same things may be stated in a national magazine by a well known writer because what he has to say has reader interest but when optometry or its press agent says it—then it is propaganda. Propaganda in press releases end up in the waste paper basket and create editorial resentment against the press agent and his client.

Whether optometry wants publicity or public relations is for optometry to determine. A profession which is subjected to some discrimination and opposition has more need of public relations than a profession which has achieved freedom from discrimination. Such a profession might more easily exist with a mild publicity program; whereas, a profession subjected to discrimination has need of a more vigorous type of program.

If we wish to observe what can be done by public relations with a group which has been subjected to unfavorable conditions, observe the liquor industry. We do not feel that there is any comparison between optometry and the liquor trade but in the revival of this business we can observe the essential steps in an aggressive public relations program working against great opposition. A number of years ago the liquor industry was illegal. Then, things began to happen. Propaganda multiplied. A president was elected. Laws were enacted. The liquor dispensary changed its character from a very unsavory type of place to one with a measure of social acceptability. *Something had happened, and that something was achieved by a Public Relations Program.* By what stretching of the human imagination can one conceive of such remarkable success being attained with just a bit of "publicity" or news agentry? Giving publicity to the old fashioned saloon would have defeated the liquor industry in seeking for repeal. A Public Relations Program involving a radical change in methods of conducting the liquor business, plus legislation, plus publicity, plus many other obscure forms of public relations activity were the ingredients of success

If a business of questionable social value such as this can be made over by public relations, what can be done with a profession as wholesome and essential to public welfare as optometry? What can public relations do for optometry other than dump mimeograph press releases on the desks of editors swamped with like material from similar sources? Public Relations will present Optometry's contribution to public welfare by introducing it into our national consciousness. Public Relations will advance the cause of optometry in many inconspicuous activities. This is the peculiar type of service for which one corporation known to the writer spent three million dollars in one year. Public Relations can aid in putting our schools on a sound financial basis with adequate endowments. Public Relations will assist in giving to every optometrist entering the practice of optometry an educational preparation more than adequate to meet every need or demand. Public Relations can do much towards eliminating the discrimination which still exists against optometry and give our new men entering the field a modicum of economic opportunity which in turn, will permit a rapid acceleration in the elimination of commercialism. For instance, when recent graduates are appointed to part time positions in the health work field of our public schools, they will not be forced into undesirable connections. Thus, Public Relations will secure for optometry a permanent and secure place in the social order

by aiding optometry to realize the fullness of its potential possibilities for constructive service to society. Can publicity substitute for a real program of public relations in the attainment of such an objective? We think not!

Current Comments by Carel C. Koch

Editor, American Journal of Optometry

Optometrists will confer a favor by sending for this department items of news of general interest; such as relate to new instruments, clinical techniques, education, public health and optometric legislation.

A SHORT REVIEW OF A HOPED FOR REVISION OF POWERS OF THE A.O.A. EDUCATIONAL COUNCIL

It is becoming increasingly evident that the 1939 action of the American Optometric Association, at its annual congress at Los Angeles, in creating the Educational Council and empowering this body to invade various optometric educational fields needs complete revision. In fact, no small number of optometrists feel that the action in its entirety should be completely abrogated. Nothing short of annulment will satisfy these men who claim the resolution which created this commission was hastily conceived, poorly thought out, improperly presented and rushed through the convention by delegates who were unable to grasp, in the short time permitted, the implications now evident in the scheme. To these men it seems obvious that a carefully prepared plan was developed which had for its ends the taking over of optometric education and the setting up of a dictatorial bureaucracy, to rule in the field of our professional training, both undergraduate as well as graduate.

That this type of action was both unnecessary as well as unsound, is evidenced by a number of letters now in the writer's possession. Letters written by outstanding optometric leaders in every part of the country. The following excerpt, taken from a letter written on February 5th, 1940, by a prominent Philadelphia optometrist will serve to illustrate the depth of feeling which has been animated by this unwise action on the part of the delegates to the last congress of the A.O.A. . . . "While I cannot be positive, I am under the impression that those interested in

university courses in optometry, are determined to discredit our independent schools. One of the leaders of this movement is almost fanatical in his expressed actions over the years to discredit the private teaching of optometry. In the past, he has never allowed the use of the word *Optometry* in the papers he edited and would not permit its use at Ohio State University when he was connected with that institution. He has repeatedly spoken against the degree *Doctor of Optometry*, and I regard many of his acts in the past as unfriendly toward us, regardless of what he now says. . . . To be sure the I.B.B. has lost some prestige in the past few years because they have granted ratings to certain schools that were then not fully meeting proper standards, and I believe that this condition may have something to do with the present demands of the Educational Council in asking for powers over the I.B.B. The schools have now improved their standards and I still believe the I.B.B. is the proper body to handle our educational institutions and I believe we must insist upon this. . . ."

The same writer concludes his letter by saying, "From an examination of the Educational Council, it is quite plain that the whole plan should be thrown out. There must be no compromise. The great danger lies in the fact that non-optometric minds are dictating the policy. We should be represented only by optometrists engaged in actual practice. It is all right to ask the advice of our educators, but the control must be in our hands. I insist that we know better the road we should travel."

This forceful letter was written by a practicing optometrist, who is himself, not an educator. He represents, without question the finest there is in optometry and his words should be very carefully considered. The optometrist just quoted, and many more like him, believe that both our university schools and our private schools are doing good jobs. They likewise believe that the I.B.B. with its semi-official standing as derived from state-wide optometry laws, has in the past done a satisfactory supervising piece of work and they also believe that as a whole optometrists are satisfied with the set-up as it is. They then ask, why attempt to change this normal working arrangement by the creation of a semi-non-optometric body to regulate these matters? A body whose very thinking on matters of optometric education may be at complete variance with that of practitioners in the field. They feel too, that it is presumptuous on the part of any outsider, regardless of his background or his former connections with optometry, to attempt to dictate to the members of our profession, on this or on any other matter. They appreciate to be sure his interests and advice, but they feel that they must insist that the final decision on

all these important matters should and must be left in the hands of men who are both licensed and practicing optometrists.

These men further feel that at the 1940 congress of the A.O.A. at Cincinnati, this matter is certain to be again presented to the delegates for additional consideration, *if the officers of that body permit the subject to be placed on the "floor."* Because of their widespread resentment towards the Educational Council and its implied future powers, they hope that the official delegates to this congress insist upon their constitutional right to fairly hear all sides of this important question, before the profession loses its control of the educational forces that will train the optometrists of the future.

A NEW DEVELOPMENT IN MODERN STYLING OF RIMLESS EYE WEAR THROUGH COSMET EDGES

It has always been a source of pride with the editorial board of the AMERICAN JOURNAL OF OPTOMETRY to thoroughly investigate products advertised within the covers of this technical magazine. The *Cosmet Corporation*, while new in name to many of our readers, represents an idea and the development of a product which optometrists not only in Minneapolis but in the nearby states have grown to accept and hold in high esteem as a worthwhile style feature of the rimless glasses which they prescribe.

Cosmet edges not only enhance the beauty of rimless glasses but possess a natural blending effect that when viewed from a short distance and under certain conditions, render the lens edges practically invisible to the observer. The artistically arranged facets as they appear on the lens edges have been carefully worked out so as to produce the required cosmetic effects. To produce these facets a contrivance has been perfected by the *Cosmet Corporation* which is known as a Cosmet Edger. This edger is distributed on a lease basis only to prescription accounts and supply houses of recognized standing throughout the United States, making it possible for optometrists and oculists to prescribe this new style feature, as part of their written prescription.

This new form of lens styling is made available to optometrists and oculists of recognized standing through a licensing plan entered into with prescription shops having qualified with the *Cosmet Corporation* to do

this type of work. The fact that the Cosmet Edges are permitted to be used only on lenses of recognized first quality should appeal to all straight thinking refractionists as, in addition to pleasing style effects, they are a definite identification that the lenses used in filling the prescription were of the highest quality.

We understand the Cosmet Improved Edge finishes are protected by a basic U. S. patent and the Cosmet Edger necessary in fabricating or producing the faceted edge finishes has patents pending. It is not only important that we as optometrists prescribe lenses to correct the patient's error of refraction or other anomalies but also important that we give sufficient attention to the patient's appearance as the glasses are being worn. This new development in styling aids in this latter phase of our work.

PROCEDURE AND INSTRUMENTATION

By Guy L. DuPlessis

A department wherein discussions will be carried on relative to the value of various experimental and clinical techniques as employed by practicing optometrists, and also in which the instruments used by optometrists in various phases of their work, will be subjected to some critical evaluation.

INDICTMENT CONCERNING THE MANUFACTURE OF OPTICAL MILITARY INSTRUMENTS

Bausch & Lomb Optical Co. of Rochester, N. Y., has, since 1921, held an exclusive license from *Carl Zeiss*, of Jena, Germany, for the use of all *Zeiss* patents issued in the United States covering the manufacture and sale of optical fire control instruments for military uses in this country. The contract granting such licenses also has entitled *Bausch & Lomb* to receive information as to the latest developments made by *Zeiss* in the design and manufacture of optical military instruments. Royalty payments on the part of *Bausch & Lomb* are provided for. The original contract made in April, 1921, was revised in 1926.

The Department of Justice has obtained indictments of *Bausch & Lomb Optical Co.* and three of its officers, alleging that, by reason of this contract, *Bausch & Lomb* has been prevented from supplying foreign governments with optical gun-fire control instruments and, further, that the contract has prevented *Zeiss* from supplying such instruments to the United States. It is also alleged that, as a result, *Bausch & Lomb* has been able to charge, and has charged, arbitrary, artificial, and unreasonably high prices for instruments sold to the United States Government.

The following statement has been issued by *Bausch & Lomb Optical Co.* concerning the indictments:

There is no quarrel as to the underlying facts of this case, including the central facts that *Bausch & Lomb* has not sought foreign military business (although *Zeiss* has at times urged that we do so) and that the United States Government has not made *Zeiss*, or any other foreign concern, a source of supply for its military instruments. It is our understanding that our Government, as in the case of most major powers, has aimed to develop its own domestic sources of supply for such equipment. The operations of our military business have been built on that premise and have been regarded by us as in the nature of a joint enterprise with our Government, particularly the Navy Department for which most of our military instruments are produced. Naval officers, continuously since 1912, have been stationed at the factory in Rochester to serve as resident inspectors of military instruments in process of manufacture and our technical staff has worked in close association with the Navy in developing gun-fire control instruments.

Viewed in the light of the foregoing, the contractual relationship with *Zeiss* should not be difficult to understand. In consideration of royalty payments on our part, we became entitled to receive from *Zeiss* technical advice and assistance in connection with the military instrument development work on which we were engaged, together with information as to the latest development work of *Zeiss* in that field. We also acquired an exclusive license to manufacture under all *Zeiss* military instrument patents in the United States and have used these rights extensively in our military instrument work. The purpose and effect of our contractual relationship with *Zeiss* has thus been to place at the disposal of our Government such *Zeiss* inventions and discoveries as were useful in the development of the Governments optical military instrument program. It has not been, as the Department of Justice charges, a

means of monopolizing the domestic market. Our Government contracts result from competitive bidding with other American manufacturers who do a substantial, and we believe an increasingly large, amount of work for the Government.

The Government naturally desires diversified sources of supply and has, accordingly, assisted, and from our point of view with propriety, in the development of our domestic competitors. We have no statistical data as to the exact volume of military business done by other concerns. The indictment alleges that it has been approximately 50% of the entire domestic volume. We do not consider that such technical advantage as we have had by reason of our relationship with *Zeiss* has overbalanced our attendant costs which, of course, have placed us at a disadvantage in competitive bidding. During at least the last six years, the benefits derived from the *Zeiss* contract have been so meagre that we have made every effort to effect a reduction in royalty payments. The outbreak of the war in Europe last year has rendered further performance by *Zeiss* obviously impossible. The contract expires in 1941.

The prices at which we have supplied military instruments to our Government have been based solely upon our own costs and are subject to no control under the *Zeiss* contract. During the first ten years in which the contract was operative, our military business resulted in an accumulated net loss. During the past ten years, the average net profit on our military business has been less than 5%.

We have made no secret of our *Zeiss* arrangements. The Navy Department was advised of the existence of the contract within a month after its execution. A copy of the 1926 contract was handed to the Department of Justice in 1929 and became a public record when filed with the Securities and Exchange Commission in 1937.

The management of *Bausch & Lomb* deeply resents the imputation of unpatriotic purposes in the operation of its business. We do not believe that the attitude of the Department of Justice is shared by other Departments of the Government having an intimate knowledge of our business operations. There are in such departments men who served during the last World War and who remember the part which this Company played at that time.

From 1908 to 1915 *Zeiss* held approximately a one-fifth stock interest in the Company. When the World War broke out, *Zeiss* at-

tempted to prevent our supplying optical equipment to the Allies. The senior generation of American stockholders, including Mr. Edward Bausch, who is now chairman of the Board of Directors, responded by repurchasing the stock held by *Zeiss* and continued to supply the Allies with all possible equipment.

During the period of the World War, approximately 90% of our instrument manufacturing facilities were devoted to the production of military instruments, which substantially dislocated the company's commercial instrument business for a number of years thereafter. Since then we have attempted to limit our military production to approximately ten per cent of our total production.

That war found this country without any domestic source of supply for optical glass. In collaboration with representatives of the Government, the Company undertook the difficult and expensive task of developing an optical glass plant, which it has maintained and continued to develop throughout the period following the war. Today, with foreign sources of supply again shut off, the Company is prepared to take care of the resultant increased demand for this basic product.

The present management of *Bausch & Lomb* is proud of the record which the older generation made for the Company at that time. We have been informed by officials of the Navy Department that the technical information and assistance which the Company has received from *Zeiss* over the years have been of great benefit to the Navy in the development of optical gun-fire control apparatus.

CORRESPONDENCE

OPTOMETRY AND PUBLIC OPINION

To the Editor: The interesting story of Optometry is nationally important . . . if we make it so. Reaching and influencing all public groups with this story is a job only an expert publicity agency can do—because selling ideas, correcting popular misunderstanding of fact and molding public opinion is their business.

Can an experienced and successful publicity agency help the Optometric profession? Answers to these questions will tell. (1) Do many

people you meet seem uninformed about optometric practice? (2) Is our profession subject to unjust public suspicion, unfair political attack or unwarranted outside dictation? (3) Would a closer relationship among our association members be desirable? (4) Is there an interesting story about the Optometric profession that newsworthy stories and pictures can tell? (5) Is there any prejudice in the public mind in favor of Ophthalmologists over the Optometrist? (6) Would it be advantageous to keep the activities of our association constantly before members, nonmembers and all public groups?

If your answer to any of these questions is YES, then you agree with me and hundreds of others within our association and profession that the A.O.A. needs and needs very urgently a program of publicity, carefully planned and executed . . . a program that will translate into newsworthy stories and pictures the interesting and educational story of Optometric practice . . . a program that will intelligently publicize the aims, ideals and objectives of our profession.

Only an experienced publicity agency understands how to plan and execute a program that will get the story of Optometry in the news, editorial, picture and feature columns of the daily and weekly newspapers throughout the nation. Only a successful publicity organization whose contacts and news judgment have been established is capable of placing our story in national magazines, pictorial publications, trade and professional journals, newsreels, radio and other media. Furthermore, only an experienced agency that understands the "professional side of the picture" is qualified to analyze the technical data compiled by our profession and from that data prepare material that will be acceptable by news editors everywhere and understandable by the public.

As a past president of the A.O.A. and vitally interested in the extended success of optometry, I am deeply concerned about the urgent need of our profession for a program of publicity. Because I am thoroughly familiar with what educational publicity has done for the dentists of America I say, let's pursue a similar policy. Let's invite the publicity agencies to meet with us in Cincinnati. They can tell us how best to let the man on the street know what optometry is doing and can do for him.

DR. HARRY E. PINE
1020 WILLOUGHBY TOWER
CHICAGO, ILLINOIS

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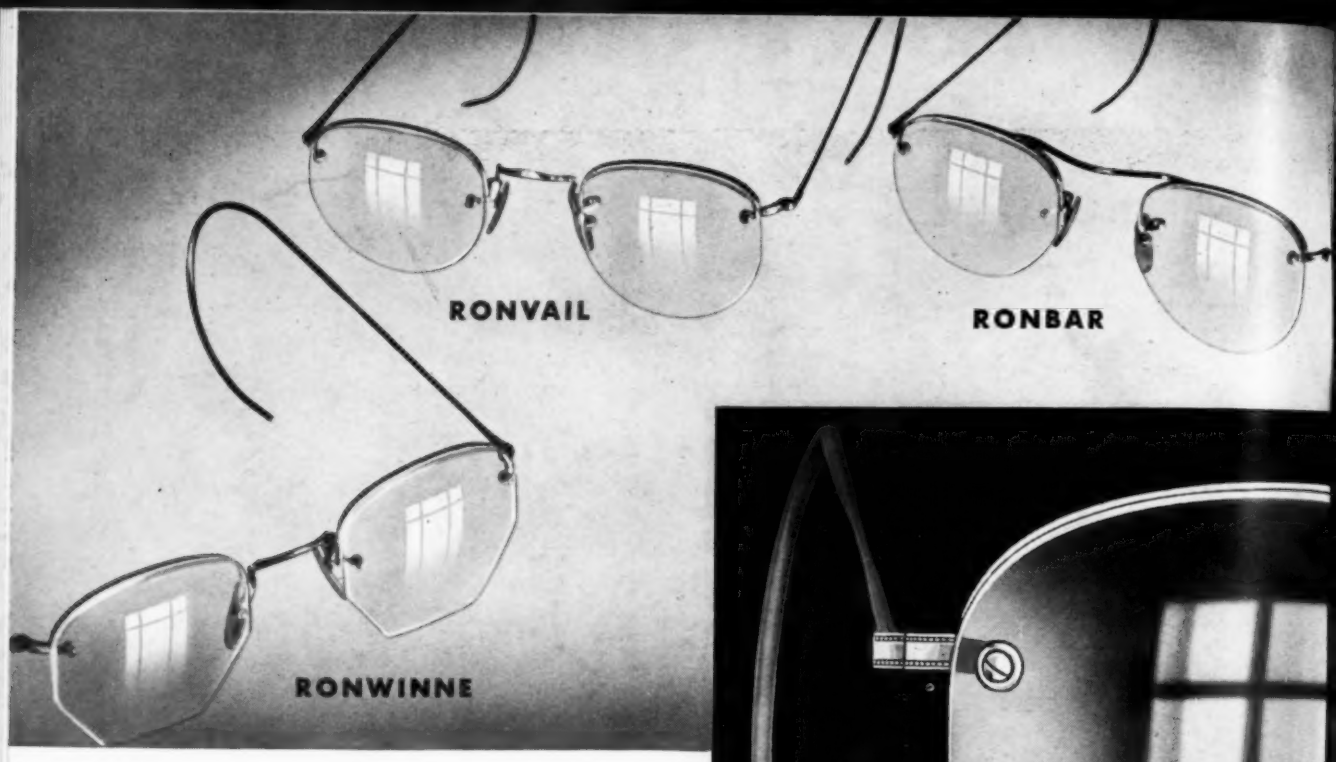

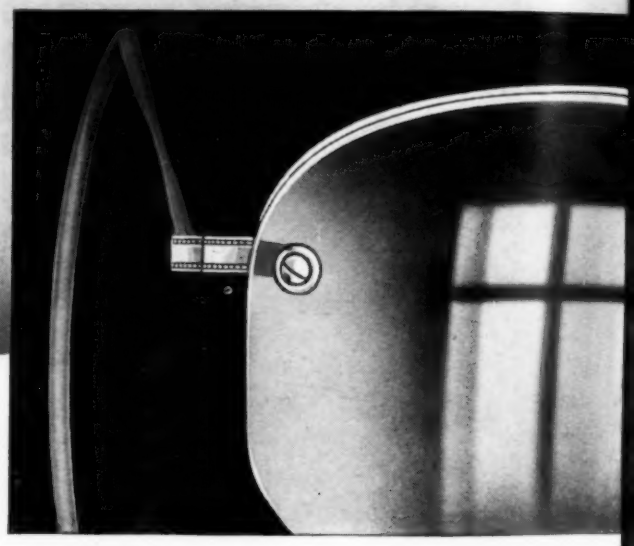

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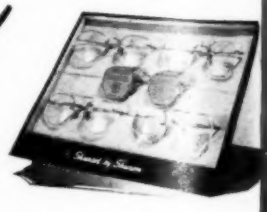

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